



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/810,313	03/15/2001	Akli Adjaoute	IMN-002	9086
1473	7590	11/23/2004	EXAMINER	
FISH & NEAVE LLP 1251 AVENUE OF THE AMERICAS 50TH FLOOR NEW YORK, NY 10020-1105			SON, LINH L D	
			ART UNIT	PAPER NUMBER
			2135	

DATE MAILED: 11/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/810,313

Applicant(s)

ADJAOUTE, AKLI

Examiner

Linh Son

Art Unit

2135

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 March 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-89 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-89 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892) #
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 01/04, 02/02/3.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 15-44, 55-60, and 74-80 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The "Systems of software component for fraud detection and prevention" in the claims lack of tangible component. The Claims pertain to computer program per se and are not embodied within a tangible article of manufacture e.g. a storage device. Appropriate correction is necessary.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claims 1, 3-4, 9-12, 15, 17-23, 26, 32-37, 41, 47, 52-54, 57-60 are rejected under 35 U.S.C. 102(b) as being anticipated by Gopinathan et al, US Patent No. 5819226, hereinafter '226.**

3. As per claim 1, "A method for detecting and preventing electronic fraud in electronic transactions between a client and a user, the method comprising: generating a fraud detection and prevention model software component for using a plurality of intelligent technologies to determine whether information sent by the user to the client associated with a new electronic transaction is fraudulent" is taught in '226 (Col 4 lines 43-63, Col 17 lines 55-65, and Col 31 lines 24-50), "wherein the model software component is trained on a database of past electronic transactions provided by the client; querying the model software component with a current electronic transaction to determine whether information sent by the user to the client associated with the current electronic transaction is fraudulent; and updating the model software component with the current electronic transaction" is taught in '226 (Col 4 lines 43-62).

4. As per claims 3, 17, 41, 47, and 57, "the system of claims 1, 15, 37, 45, and 55, wherein the plurality of software routines for training each one of the sub-models comprises one or more of the following: a neural network training routine; a data mining training routine; a multi-agent training routine; a case-based reasoning training routine; a rule-based reasoning training routine; a fuzzy logic training routine; a constraint programming training routine; and a genetic algorithm training routine" is taught in '226 (Col 5 lines 17-33, and Col 6 line 5 to Col 7 line 24).

5. As per claim 4, "the method of claim 1, wherein the fraud detection and prevention model software component comprises a plurality of sub-models, each sub-

model implementing an intelligent technology to determine whether the electronic transaction is fraudulent” is taught in ‘226 (Col 4 line 65 to Col 5 line 15, and Col 6 line 5 to Col 7 line 24).

6. As per claim 9, “the method of claim 8, wherein running the binary file to generate an output decision on whether the electronic transaction is fraudulent comprises running the plurality of sub-model software components to generate a plurality of sub-model decisions and combining the plurality of sub-model decisions to generate the output decision” is taught in ‘226 (Col 28 line 16 to Col 31 line 23).

7. As per claim 10, “the method of claim 9, wherein combining the plurality of sub-model decisions to generate the output decision comprises assigning a vote to each sub-model decision and generating the output decision based on the majority of votes determining whether the electronic transaction is fraudulent or not” is taught in ‘226 (Col 28 line 16 to Col 31 line 23).

8. As per claim 11, “the method of claim 9, wherein combining the plurality of sub-model decisions to generate the output decision comprises assigning a weighted vote to each one of the sub-models, wherein the weighted vote is assigned to prioritize the sub-model decisions, and generating the output decision based on the highest number of votes determining whether the electronic transaction is fraudulent or not” is taught in ‘226 (Col 28 line 16 to Col 31 line 23).

9. As per claim 12, “the method of claim 9, wherein combining the plurality of sub-model decisions to generate the output decision comprises providing a plurality of meta-rules to determine how the sub-model decisions are combined to generate the output decision” is taught in ‘226 (Col 28 line 16 to Col 31 line 23, and Col 6 line 5 to Col 7 line 24).

10. As per claim 15, “A system for dynamic detection and prevention of fraud in electronic transactions between a client and a user, the system comprising: a fraud detection and prevention model software component for determining the probability that information sent by the user to the client associated with a current electronic transaction is fraudulent” is taught in ‘226 (Col 4 lines 43-63, Col 17 lines 55-65, and Col 31 lines 24-50) ” is taught in ‘226 (Col 4 lines 43-63, Col 17 lines 55-65, and Col 31 lines 24-50), “wherein the model software component comprises a plurality of integrated sub-model components, each sub-model component comprising software routines for implementing an intelligent technology; a fraud detection and prevention model training software component for training the model on a database of past electronic transactions provided by the client and for updating the model with data from the current electronic transaction” is taught in ‘226 (Col 6 line 5 to Col 7 line 24); and “a fraud detection and prevention model querying component for querying the fraud detection and prevention model with the current electronic transaction to determine the likelihood that the current electronic transaction is fraudulent” is taught in ‘226 (Col 29 line 2 to Col 30 line 35).

11. As per claim 18, “the system of claim 17, wherein the neural network software component comprises a neural network software routine for generating a neural network for predicting an output from an input data record associated with the current electronic transaction, the output determining the likelihood that the current electronic transaction is fraudulent” is taught in ‘226 (Col 28 line 16 to Col 31 line 23).

12. As per claim 19, “the system of claim 18, wherein the neural network comprises a plurality of interconnected processing elements arranged into three layers, the layers comprising an input layer; a hidden layer; and an output layer” is taught in ‘226 (Col 5 lines 35-50).

13. As per claim 20, “the system of claim 19, wherein each processing element in the input layer represents a field of the input data record” is taught in ‘226 (Col 5 lines 35-50).

14. As per claim 21, “the system of claim 19, wherein each processing element in the output layer represents a predicted value for the output of the input data record” is taught in ‘226 (Col 5 lines 35-50).

15. As per claim 22, “the system of claim 19, wherein each processing element in the hidden layer comprises: a plurality of inputs, each input connected to each processing

element in the input layer; a plurality of input weights, each input weight associated with an input from the plurality of inputs; a first and a second limiting threshold; a plurality of output weights, each output weight associated with an output from the plurality of outputs; and a plurality of outputs, each output connected to each processing element in the output layer” is taught in ‘226 (Col 5 lines 17-50, and Col 19 line 25 line 7 to Col 20 line 48).

16. As per claim 23, “the system of claim 18, wherein predicting an output from an input data record associated with the current electronic transaction comprises propagating the input data record through the plurality of interconnected processing elements in the neural network” is taught in ‘226 (Col 6 line 5 to Col 7 line 24).

17. As per claim 26, “the system of claim 17, wherein the data mining software component comprises software routines for creating a decision tree to group a plurality of data records in the database together according to their similarity” is taught in ‘226 (Col 6 line 10 to Col 8 line 40).

As per claim 32, “the system of claim 17, wherein the multi-agent software component comprises a software agent for creating intervals of normal values for fields in the database and a software agent for determining dependencies between each field in the database to determine the likelihood that the electronic transaction is fraudulent” is

taught in '226 (Col 25 line 60 to Col 27 line 15).

18. As per claim 33, "the system of claim 17, wherein the case-based reasoning software component comprises software routines for: creating a plurality of sample cases to represent all the data records in the database; and searching the decision tree to determine the similarity between a data record associated with a current electronic transaction and the sample cases; and determining whether the electronic transaction is fraudulent based on the sample case that has the highest similarity to the data record associated with the current electronic transaction" is taught in '226 (Col 27 lines 48-63).

19. As per claim 34, "the system of claim 17, wherein the rule-based software component comprises using a plurality of business rules to determine whether the data record associated with the current electronic transaction is fraudulent" is taught in '226 (Col 27 lines 35-47).

20. As per claim 35, "the system of claim 17, wherein the constraint programming software component comprises using a plurality of constraints to determine whether the data record associated with the current electronic transaction is fraudulent" is taught in '226 (Col 29 line 2 to Col 30 line 36).

21. As per claim 36, "the system of claim 17, wherein the fuzzy logic software component comprises fuzzifying a plurality of rules to generate a plurality of fuzzy rules

to determine whether the data record associated with the current electronic transaction is fraudulent” is taught in ‘226 (Col 6 lines 10-28).

22. As per claim 37, “the system of claim 15, wherein the model training software component comprises a model training software interface and a plurality of software routines for training each one of the sub-models” is taught in ‘226 (Col 4 line 65 to Col 5 line 15, and Col 6 line 5 to Col 7 line 24).

23. As per claim 52, “the system of claim 45, wherein combining the plurality of sub-models to create the model for detecting and preventing electronic fraud comprises generating a binary output decision to determine whether the current electronic transaction is fraudulent based on a plurality of sub-model decisions, wherein generating the binary output decision comprises assigning a vote to each sub-model decision and generating the output decision based on the majority of votes determining whether the electronic transaction is fraudulent or not” is taught in ‘226 (Col 5 lines 17-50, and Col 19 line 25 line 7 to Col 20 line 48).

24. As per claims 53 and 58, “the system of claims 45 and 55, wherein combining the plurality of sub-models to create the model for detecting and preventing electronic fraud comprises generating a binary output decision to determine whether the current electronic transaction is fraudulent based on a plurality of sub-model decisions, wherein generating the binary output decision further comprises assigning a weighted vote to

each one of the sub-models, wherein the weighted vote is assigned to prioritize the sub-model decisions, and generating the output decision based on the highest number of votes determining whether the electronic transaction is fraudulent or not” is taught in ‘226 (Col 5 lines 17-50, and Col 19 line 25 line 7 to Col 20 line 48).

25. As per claims 54 and 60, “the system of claims 45 and 55, wherein combining the plurality of sub-models to create the model for detecting and preventing electronic fraud comprises generating a binary output decision to determine whether the current electronic transaction is fraudulent based on a plurality of sub-model decisions, wherein generating the binary output decision further comprises providing a plurality of meta-rules to determine how the sub-model decisions are combined to generate the output decision” is taught in ‘226 (Col 5 lines 17-50, and Col 19 line 25 line 7 to Col 20 line 48).

26. As per claim 59, “the fraud detection and prevention model of claim 55, wherein the voting and arbitrating software routine further comprises assigning a weighted vote to the individual predictions of each sub-model, wherein the weighted vote is assigned to prioritize the individual predictions, and generating the **binary decision** based on the highest number of votes determining whether the electronic transaction is fraudulent or not” is taught in ‘226 (Col 5 lines 17-50, and Col 19 line 25 line 7 to Col 20 line 48).

Claim Rejections - 35 USC § 102

27. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

28. Claims 61-62, 64-69, 71-79, 80-85, and 88-89 are rejected under 35

U.S.C. 102(e) as being anticipated by Porras et al, US Patent No. 6711615B2, hereinafter '615.

29. As per claims 61, 74, and 81, "A method for dynamic detection and prevention of network intrusion, the method comprising: providing a fraud detection and prevention model software component comprising a plurality of sub-model software components, each sub-model software component implementing an intelligent technology to determine whether data associated with a current network user is fraudulent" is taught in '615 (Col 5 line 40 to Col 6 line 6, and Col 6 lines 47-67), "wherein the sub-model software components are trained on a database of past network usage profiles; querying the model software component with data associated with a current network user to determine whether there is network intrusion; and updating the model software component" is taught in '615 (Col 6 lines 45-67, and Col 7 line 13 to Col 8 line 56).

Art Unit: 2135

30. As per claim 62, “the method of claim 61, wherein the fraud detection and prevention model software component comprises detecting and preventing electronic fraud in electronic transactions” is taught in ‘615 (Col 7 line 13 to Col 8 line 56).

31. As per claims 64, 75, 80, and 82, the method of claims 61, 74, 77, and 81, “wherein the plurality of sub-model software components comprises one or more of the following: a neural network software component; a multi-agent software component; a data mining software component; a case-based reasoning software component; a rule-based reasoning software component; a fuzzy logic software component; a constraint programming software component; and a genetic algorithms software component” is taught in ‘615 (Col 7 line 13 to Col 8 line 56).

32. As per claims 65, 76, and 83, “the method of claims 61, 74, and 83, wherein the fraud detection and prevention model software component comprises a binary file for implementing the plurality of sub-model software components” is taught in ‘615 (Col 6 lines 47-67).

33. As per claim 66, “the method of claim 61, wherein the database comprises a plurality of tables, wherein each table comprises a plurality of data fields and data records associated with a plurality of network usage profiles” is taught in ‘615 (Col 5 line 45 to Col 6 line 7).

34. As per claim 67, “the method of claim 61, wherein querying the model software component with data associated with a current network user to determine whether there is network intrusion comprises providing data associated a current network user as input to the binary file and running the binary file to generate a binary output decision on whether there is network intrusion or not” is taught in ‘615 (Col 7 line 1 to Col 8 line 23).

35. As per claim 68, “the method of claim 67, wherein running the binary file to generate an output decision on whether there is network intrusion comprises running the plurality of sub-model software components to generate a plurality of sub-model decisions and combining the plurality of sub-model decisions to generate the output decision” is taught in ‘615 (Col 6 line 47 to Col 7 line 50).

36. As per claims 69 and 87, “the method of claims 68 and 81, wherein combining the plurality of sub-model decisions to generate the output decision comprises assigning a vote to each sub-model decision and generating the output decision based on the majority of votes determining whether there is network intrusion or not” is taught in ‘615 (Col 7 lines 1-33).

37. As per claims 70 and 88, “the method of claims 68 and 81, wherein combining the plurality of sub-model decisions to generate the output decision further comprises assigning a weighted vote to each one of the sub-model software components, wherein the weighted vote is assigned to prioritize the sub-model decisions, and generating the

output decision based on the highest number of votes determining whether there is network intrusion or not” is taught in ‘615 (Col 7 line 1 to Col 8 line 23).

38. As per claim 71, “the method of claim 68, wherein combining the plurality of sub-model decisions to generate the output decision further comprises providing a plurality of meta-rules to determine how the sub-model decisions are combined to generate the output decision” is taught in ‘615 (Col 7 line 1 to Col 8 line 23).

39. As per claim 72, “the method of claim 61, wherein updating the model software component with data associated with a current network user comprises updating the binary file without retraining the model software component” is taught in ‘615 (Col 6 lines 47-67).

40. As per claim 73, “the method of claim 61, wherein updating the model software component with data associated with a current network user further comprises updating the database and retraining the model software component to generate a new binary file” is taught in ‘615 (Col 6 lines 47-67).

41. As per claims 77, 84, and 89, “the system of claims 76 and 81, wherein the model training interface comprises a graphical user interface comprising a plurality of dialog boxes and forms for the client to perform a plurality of steps to configure, create, and test the model software component, the steps comprising: configuring the model

parameters; visualizing the contents of a database containing data records of past network usage profiles used for training the model; retrieving statistics of the data in the database; creating the model software component and saving it into a binary file; and creating a web query form for querying the model software component on the web with data associated with past network usage profiles” is taught in ‘615 (Col 10 lines 20-36).

42. As per claims 78 and 85, “the system of claims 77 and 84, wherein the steps further comprise testing the model software component” is taught in ‘615 (Col 10 lines 20-36).

43. As per claims 79 and 86, “the system of claims 77 and 84, wherein configuring the model parameters comprises: selecting the database containing a plurality of tables of data records of past network usage profiles; selecting a plurality of tables from the plurality of tables in the database to be used for training the model software component; selecting a field in the database to be designated as the model output; selecting the values that are considered normal values for the model output; selecting the sub-model software components to be used in the model software component” is taught in ‘615 (Col 10 lines 20-36).

Claim Rejections - 35 USC § 103

44. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

45. Claims 2, 16, 46, and 63 are rejected under 35 U.S.C. 103(a) as being unpatentable over '226.

46. As per claims 2, 16, 46, and 63, the method of claims 1, 15, 45, and 62.

However, the electronic transactions comprise web-based transactions and transactions conducted over wireless networks with the use of cellular phones" is not taught in '226.

However, the invention in '226 is directed to electronic fraud detection and prevention independent of network and apparatus utilized to collect the data. It would have been obvious at the time of the invention for one having ordinary skill in the art to modify the invention to detect fraudulent electronic transaction to best server a highly grown and complex environment such as cellular transaction.

47. Claims 5-6, 8, 13-14, 24-25, 42-44, and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over '226 in view of Agrafiotis et al, US Patent No. 6453246B1, hereinafter '246.

48. As per claim 5, "the method of claim 4, wherein the fraud detection and prevention model software component comprises a binary file for implementing the plurality of sub-model software components" is not taught in '226. Nevertheless, '246 does includes the model software component comprises binary files to evaluate the data (Col 12 lines 54-57, and Col 13 lines 23-26). It would have been obvious at the

time of the invention was made for one having ordinary skill in the art to implement the binary files as the model software component to enable a solution to evaluate a complex environment where the multidimensional variables is necessary to describe it (Col 7 line 60 to Col 8 line 2).

49. As per claim 6, “the method of claim 1, wherein training the model software component on a database of past electronic transactions provided by the client comprises training the plurality of sub-model software components” is taught in ‘226 (Col 28 line 16 to Col 31 line 23). However, “creating the binary file for implementing the plurality of sub-model software components” is not taught in ‘226. The similar basis of claim 5’s rejection is incorporated here.

50. As per claim 8, “the method of claim 1, wherein querying the model software component with a current electronic transaction to determine whether information sent by the user to the client associated with the current electronic transaction is fraudulent comprises providing the information as input to the trained data file and running the trained data file to generate a output decision on whether the electronic transaction is fraudulent or not” is taught in ‘226 (Col 28 line 16 to Col 31 line 23). However, “providing the information as input to the binary file and running the binary file to generate an output decision on whether the electronic transaction is fraudulent or not” is not taught in ‘226. Nevertheless, the implementation of binary file to generate an binary output decision on whether the electronic transaction is fraudulent or not is taught in

'246 (Col 13 lines 20-63). It would have been obvious at the time the invention was made for one having ordinary skill in the art to implement the binary file for fraudulent evaluation. It would be obvious to implement the binary file, because in multidimensional space data evaluation it is more comprehensive to evaluate the data in numerical format using mathematical equations (Col 7 line 60 to Col 8 line 2).

51. As per claims 13 and 56, same rejection basis as in claim 8. Further, "the method of claims 1 and 55, wherein updating the model software component with the current electronic transaction comprises updating the binary file without retraining the model" is taught in '246 (Col 15 lines 55-65).

52. As per claim 14, the method of claim 1, "wherein updating the model software component with the current electronic transaction further comprises updating the database with the current electronic transaction and retraining the model to generate a new ASCII file" is taught in '226 (Col 6 line 5 to Col 7 line 24). However, the model represents in binary file is not taught in '226. Nevertheless, since the claimed invention is directed to a complex and multi-dimensional environment, the binary file implementation must be utilized to best serve the evaluation environment. This teaching is taught clearly in '246 (Col 13 lines 20-63). It would be obvious at the time of the invention was made for one having ordinary skill in the art to incorporate the binary file format to best serve a complex evaluation problem.

53. As per claim 24, "the system of claim 23" is taught clearly in '226. However, the cited invention does implement "the propagating the input data record through the plurality of interconnected processing elements in the neural network comprises the steps of: a) determining the distance between the input data record and the plurality of input weights for a single processing element in the hidden layer; b) verifying if the distance between the input data record and the plurality of input weights is between the first and second limiting thresholds for the single processing element in the hidden layer; c) adding the plurality of input weights to the plurality of output weights of each processing element in the hidden layer if the distance is between the first and second limiting thresholds of the single processing element in the hidden layer; d) repeating steps a), b), and c) for each processing element in the hidden layer; and f) determining the processing element in the output layer connected to the output of the processing element in the hidden layer from the plurality of processing elements in the hidden layer that has the higher output weight; and g) assigning the processing element in the output layer connected to the output of the processing element in the hidden layer that has the highest output weight to the predicted output value of the input record". Nevertheless, "the propagating the input data record through the plurality of interconnected processing elements in the neural network comprises the steps of: a) determining the distance between the input data record and the plurality of input weights for a single processing element in the hidden layer; b) verifying if the distance between the input data record and the plurality of input weights is between the first and second limiting thresholds for the single processing element in the hidden layer; c) adding the plurality of input weights

to the plurality of output weights of each processing element in the hidden layer if the distance is between the first and second limiting thresholds of the single processing element in the hidden layer; d) repeating steps a), b), and c) for each processing element in the hidden layer; and f) determining the processing element in the output layer connected to the output of the processing element in the hidden layer from the plurality of processing elements in the hidden layer that has the higher output weight; and g) assigning the processing element in the output layer connected to the output of the processing element in the hidden layer that has the highest output weight to the predicted output value of the input record” ” is taught in ‘246 (Col 13 line 20 to Col 14 line 55). It would have been obvious at the time of the invention was made for one having ordinary skill in the art to implement the data evaluation steps above to best serve a complex environment.

54. As per claims 25 and 43, the system of claims 24 and 42, “wherein the distance between the input data record and the plurality of input weights for a single processing element in the hidden layer is computed with a distance measure selected from a plurality of distance measures, comprising: an Euclidean distance measure; a Manhattan distance measure; a Normalized Euclidean distance measure; a Normalized Manhattan distance measure; and a Weighted-Euclidean distance measure” is taught in ‘246 (Col 12 line 35 to Col 14 line 38).

Art Unit: 2135

55. As per claim 42, “the system of claim 41, wherein the neural network training routine comprises the steps of: a) initializing a training set containing all the data records in the database” is taught in ‘226 (Col 4 lines 43-62). In ‘226, the training routine comprises steps of evaluating the past data in the database by implementing weight-Elimination process (Col 19 lines 7-65). However, the steps of b) creating a distance matrix D containing the distance between two data records in the training set; c) sorting the distance matrix D; d) determining a subset S of data records in each row of the distance matrix that contains the highest number of data records having the same output; e) adding a new processing element to the hidden layer of the neural network having a first and a second limiting thresholds; f) removing the subset S from the training set; g) adjusting the weights in the neural network; and h) repeating steps b), c), d), e), f), and g) until the training set is empty” is not specified in ‘226. Nevertheless, the steps of the training routine above is include in ‘246 (Col 10 line 36 to Col 11 line 40). Therefore, it would have been obvious at the time of the invention was made for one having ordinary skill in the art to incorporate the data training steps in ‘246 to provide a complex calculation evaluation for the complex multivariable and multidimensional environment where the data is collected.

56. As per claim 44, the system of claim 41, wherein the first limiting threshold corresponds to the smallest distance in the subset S and the second limiting threshold corresponds to the highest distance in the subset S” is taught in ‘226 (Col 19 lines 44-

54).

57. Claim 48 is rejected under 35 U.S.C. 103(a) as being unpatentable over '226 in view of '615.

58. As per claim 48, "the system of claim 45," is taught in '226. Further, "the creation the plurality of sub-models comprises training the sub-models on a database of past electronic transactions" is taught in '226 (Col 4 line 65 to Col 5 line 15, and Col 6 line 5 to Col 7 line 24). However, the capability of selecting the sub-models to train is not taught in '226. Nevertheless, this capability is taught in '615 (Col 10 lines 20-35). It would have been obvious at the time of the invention was made for one having ordinary skill in the art to incorporate this capability to create a user friendly and to have more control of the environment.

59. Claims 27-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over '226 in view of Ho, US Patent No. 6009199, hereinafter '199.

60. As per claim 27, "the system of claim 26" is taught clearly in '226. However, "the creation of the decision tree comprises the steps of: a) forming a subset containing all the data records in the database; b) splitting the subset into a first and second subset according to an impurity function; c) assigning the first and the second subsets to a first and a second node in the binary decision tree; d) determining whether the data records

in the first and the second subsets belong to the same output class; e) repeating steps b), c), and d) for each of the first and second subsets if the data records in each of the first and second subsets do not belong to the same output class” is not taught in ‘226. Nevertheless, the creation steps of the decision tree are taught clearly in ‘199 (Col 3 line 10 to Col 4 line 7, and Col 4 line 54 to Col 5 line 64). Therefore, it would have been obvious for one having ordinary skill in the art to incorporate the steps of creating the decision tree to evaluate the fraudulency of the complex data in more accurately.

61. As per claim 28, “the system of claim 27, wherein the impurity function comprises entropy function and a Gini index function to determine the information value of each field in the database” is taught in ‘199 (Col 1 line 57 to Col 2 line 4).

62. As per claim 29, “the system of claim 27, wherein splitting the subset into a first and a second subset according to an impurity function comprises: determining the field with the highest information value; determining the data records in the subset that satisfy a test on the field with the highest information value; assigning the data records in the subset that satisfy the test to the first subset; and assigning the data records in the subset that do not satisfy the test to the second subset” is taught in ‘199 (Col 5 lines 30-53).

63. As per claim 30, “the system of claim 29, wherein the test on the field with the highest information value comprises a test on whether the value of the field is smaller

than a given value if the field is a numeric field, or equal to a given value if the field is a symbolic field” is taught in ‘199 (Col 6 line 53 to Col 7 line 20).

64. As per claim 31, “the system of claim 30, wherein the given value is selected to split the data records in the subset into a first and a second subsets containing the highest possible number of data records belonging to the same output class” is taught in ‘199 (Col 6 line 53 to Col 7 line 20).

65. Claims 38-40 and 49-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over ‘226 in view of Porras et al, US Patent No. 6711615B2, hereinafter ‘199.

66. As per claims 38 and 49, “the system of claims 37 and 45” is taught clearly in ‘226. Further, ‘226 also include a plurality of steps to configure, create, and test the model software component, the steps comprising: configuring the model parameters; visualizing the contents of a database containing data records of past electronic transactions used for training the model software component; retrieving statistics of the data in the database; creating the model software component and saving it into a binary file; and creating the model software component on the web with data associated with an electronic transaction. However, ‘226 does not teach a graphical interface to configure, create, test the model software, and query it for fraudulency check. Nevertheless, in ‘615, a neural network is implemented to evaluate fraudulency of

transaction, which also includes a graphical interface (Col 14 lines 57-65). Therefore, it would have been obvious at the time of the invention for one having ordinary skill in the art to incorporate the graphical interface to view and control the fraudulent checking process in a user-friendly environment.

67. As per claims 39 and 50, "the system of claims 38 and 49, wherein the steps further comprise testing the model software component" is taught in '226 (Col 31 lines 25-35).

68. As per claims 40 and 51, "the system of claims 38 and 49, wherein configuring the model parameters comprises: selecting the database containing a plurality of tables of data records of past electronic transactions; selecting a plurality of tables from the plurality of tables in the database to be used for training the model software component; selecting a field in the database to be designated as the model output; selecting the values that are considered normal values for the model output; selecting the sub-model software components to be used in the model" is taught in '226 (Col 30 lines 24-35).

69. Claim 63 is rejected under 35 U.S.C. 103(a) as being unpatentable over '615.

70. As per claim 63, the method of claim 63. However, the electronic transactions comprise web-based transactions and transactions conducted over wireless networks with the use of cellular phones" is not taught in '615. However, the invention in '615 is

directed to electronic fraud detection and prevention independent of network and apparatus utilized to collect the data. It would have been obvious at the time of the invention for one having ordinary skill in the art to modify the invention to detect fraudulent electronic transaction to best server a highly grown and complex environment such as cellular transaction.

Conclusion

71. Any inquiry concerning this communication from the examiner should be directed to Linh Son whose telephone number is (571)-271-3856.

72. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor Kim Y. Vu can be reached at (571)-272-3859. The fax numbers for this group are (703)-872-9306 (official fax). Any inquiry of general nature or relating to the status of this application or proceeding should be directed to the group receptionist whose telephone number is (571)-272-2100.

73. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval IPAIR.I system. Status information for published applications may be obtained from either Private PMR or Public PMR. Status information for unpublished applications is available through Private PMR only. For

Application/Control Number: 09/810,313

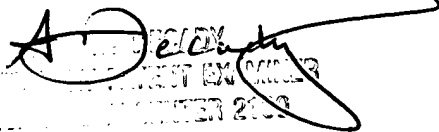
Page 27

Art Unit: 2135

more information about the PAIR system, see <http://pzd-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Linh LD Son

Patent Examiner


Linh LD Son
Patent Examiner
October 2009